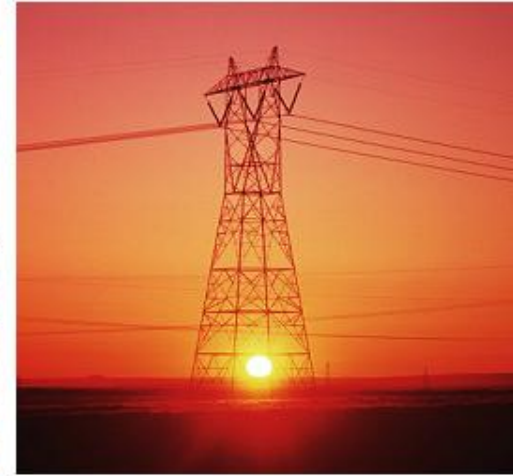




# Generator Interconnection and Transmission Service Processes





# Agenda

1

Generator Interconnections

2

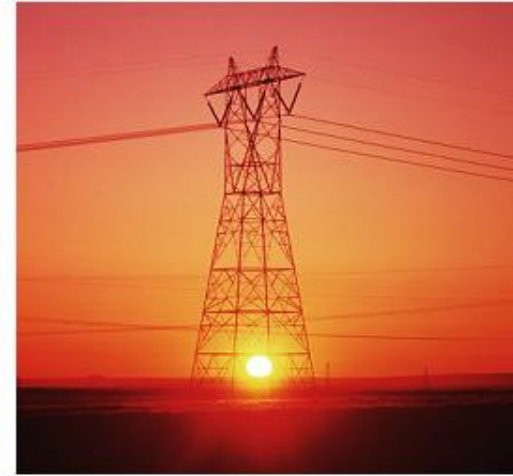
Transmission Service Requests





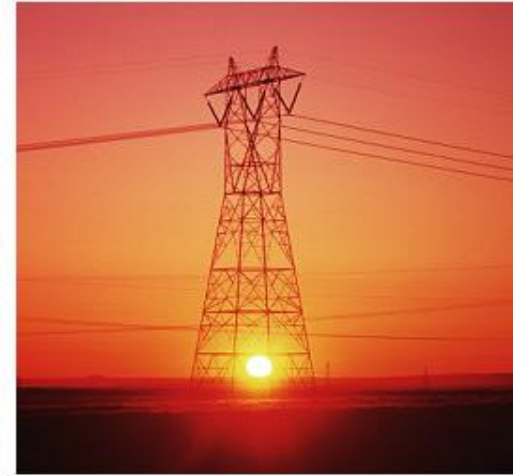
## Generator Interconnection Processes

- Large Generator Interconnection (LGI),  $> 20$  MW
- Small Generator Interconnection (SGI),  $\leq 20$  MW

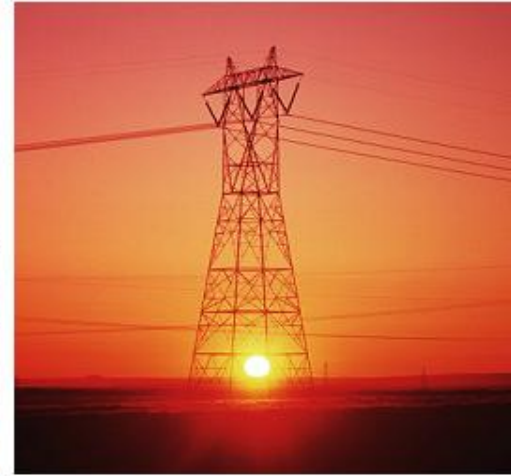


## Western's Generator Interconnection Studies

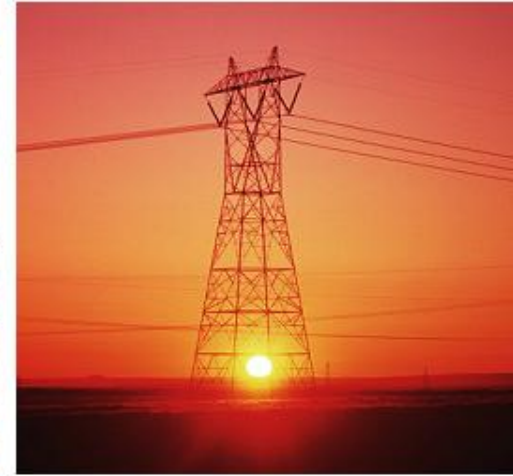
- Interconnection Customer advances the funds for all study costs
- Three studies performed:
  - **Feasibility Study**
  - **System Impact Study**
  - **Facilities Study**



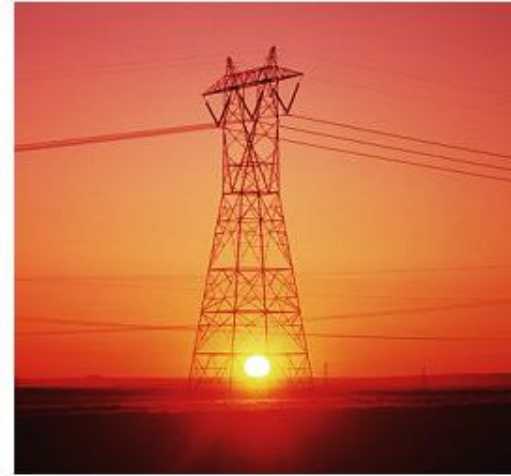
- **Feasibility Study Content**
  - **Evaluates the feasibility of the proposed interconnection**
  - **Power Flow Study: N-0, N-1, and N-2 on all transmission circuits in the state of Arizona and in Western's System.**
  - **Short Circuit Study: Run 3-phase and single phase to ground faults at each Western station**



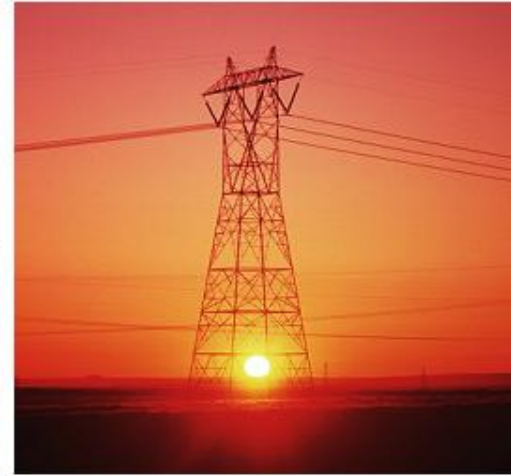
- Feasibility Study Cost & Time
  - **\$10,000 deposit and 45 Calendar Day study timeline for LGI**
  - **Western's good faith estimate of cost and 30 Calendar Day study timeline for SGI**
  - **Can be skipped if Western and customer agree to go straight to System Impact Study.**



- **System Impact Study Content**
  - **Evaluation of the proposed interconnection's impact on the reliability of Western's transmission system and any other affected systems**
  - **Power Flow and Short-Circuit: Same as Feasibility with defined plant model**
  - **Transient Stability: Run 3-phase bus faults on Western's stations with 5-cycle clearing**



- **System Impact Study Cost & Time**
  - **\$50,000 deposit and 90 Calendar Day study timeline for LGI**
  - **Western's good faith estimate of cost and 45 Calendar Day study timeline for SGI**
  - **Can be skipped for SGI provided the Feasibility Study was performed and shows no adverse impact.**

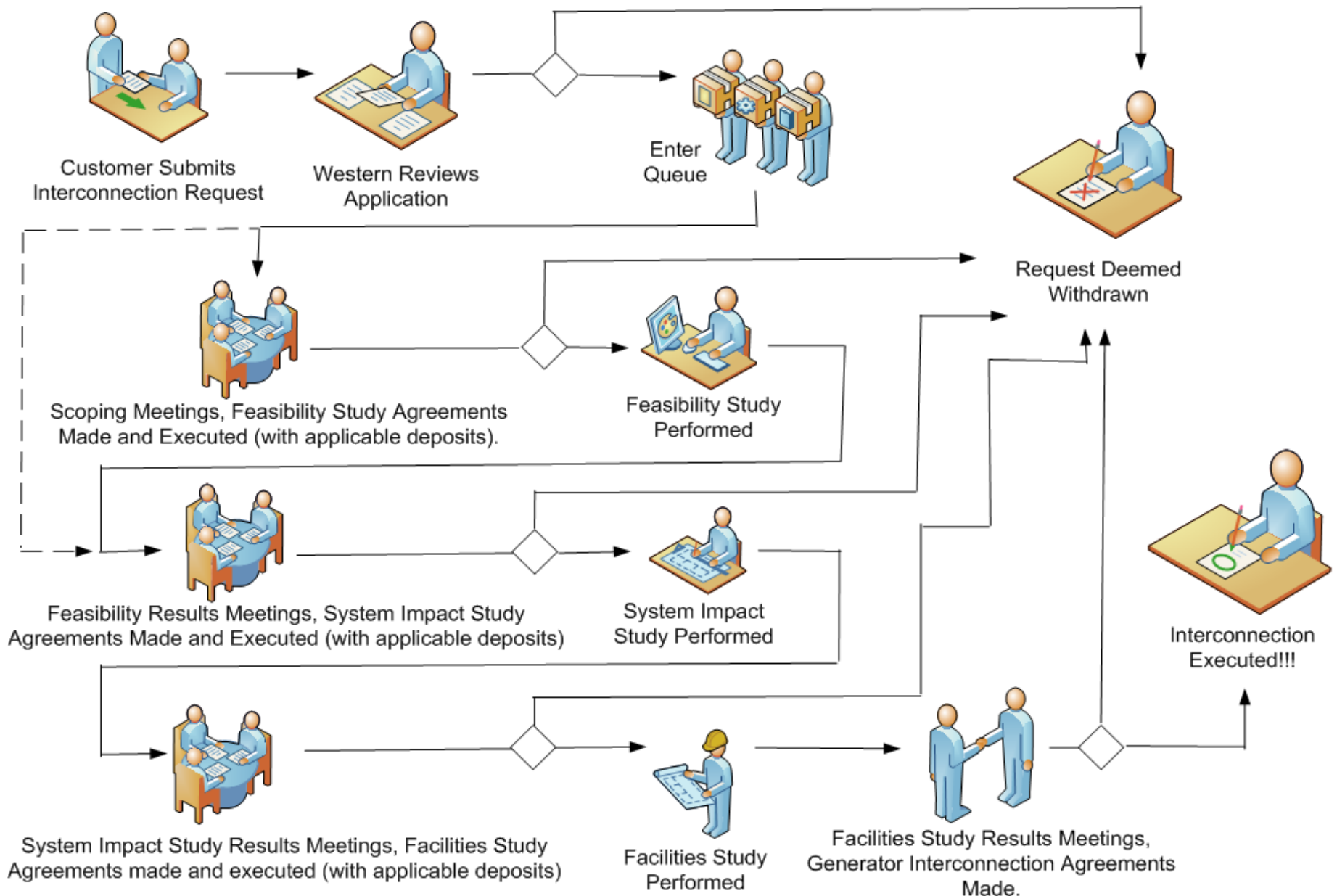


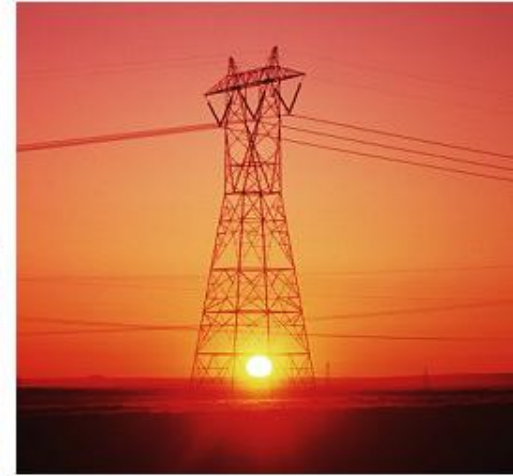
- Facilities Study Content
  - **Determines:**
    - The facilities and modifications necessary to complete the interconnection – electrical switching configuration, transformer, switchgear, meters, and other equipment
    - Cost of facilities
    - Time required to interconnect the Generating Facility with Western's transmission system



- **Facilities Study Cost & Time**
  - **\$100,000 deposit for LGI**
  - **For LGI timeline is either 90 Calendar Days or 180 Calendar Days dependent on accuracy in new facilities cost estimate**
  - **Western's good faith estimate of cost for SGI and 45 Calendar day study timeline**

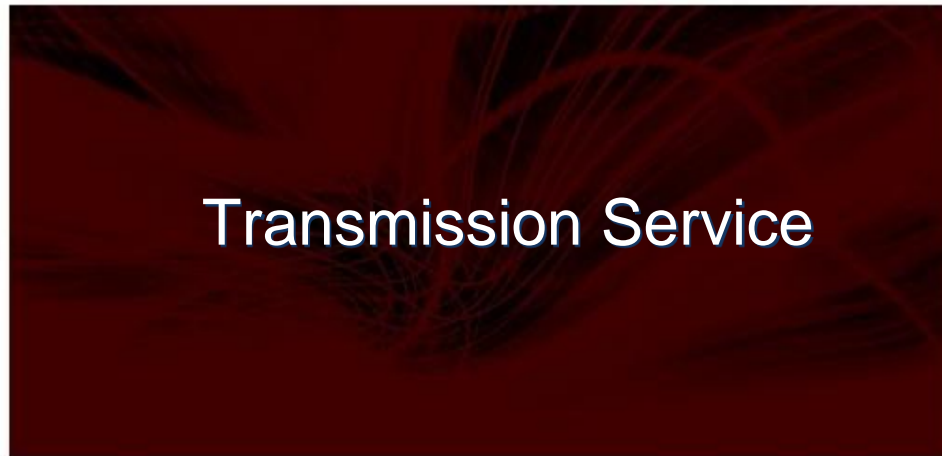
# Generator Interconnection Process

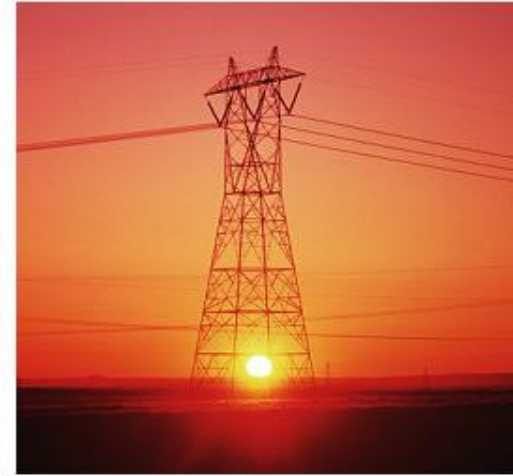




## Generator Interconnection – NEPA Review

- A National Environmental Policy Act (NEPA) review process should begin on or shortly after customer elects to proceed with the Facilities Study.
- 10 to 24 months depending on average generator MW output.
- Western manages process but contracted to a third party





## Transmission Service

- Interconnection and transmission are separate and distinct services
  - **Interconnection does not grant transmission capacity**
  - **Western cannot require the Interconnection Customer to file a transmission request, but suggests doing so the customer may avoid queuing issues**



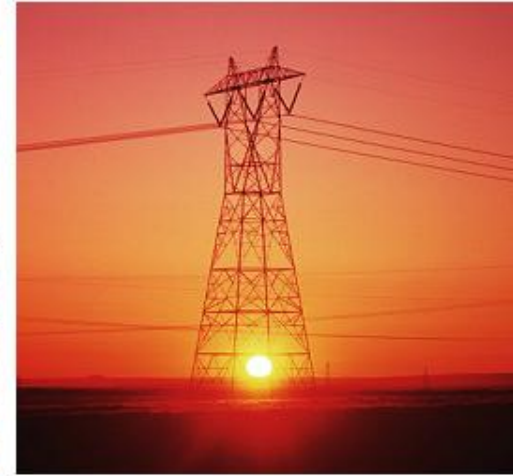
## Transmission Service Types

- Point-to-Point Transmission Service
- Network Integration Transmission Service

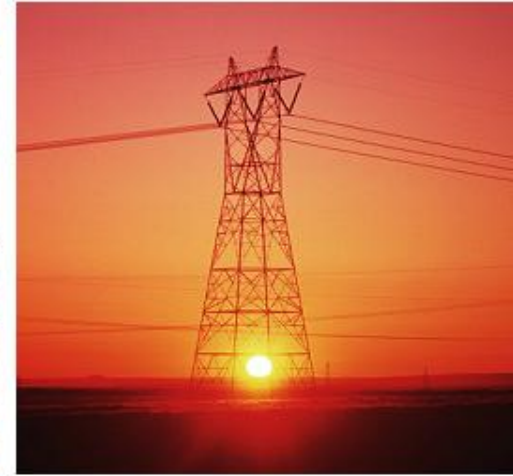


## Transmission Request

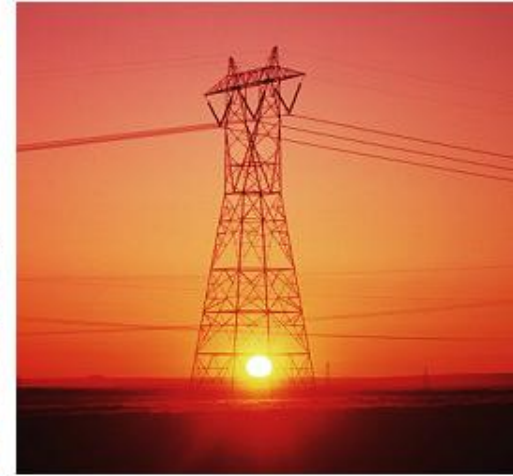
- Transmission Customer submits application and deposit equal to one month's charge for Reserved Capacity (not to exceed \$100,000)
- Western will perform System Impact Study and Facilities Study unless transmission capacity on requested path is available.



- **System Impact Study - \$50,000 deposit and 60 Calendar Day study timeline**
  - **Identify any system constraints**
  - **Redispatch options to accommodate request**
  - **Available options for installation of automatic devices to curtail service**
  - **Direct assignments or network upgrades needed to provide service**



- **System Impact Study Content**
  - **Power Flow Study: N-0, N-1, and N-2 on all transmission circuits in the state of Arizona and in Western's System.**
  - **Short Circuit Study: Run 3-phase and single phase to ground faults at each Western station**
  - **Transient Stability: Run 3-phase bus faults on Western's stations with 5-cycle clearing**



- Facilities Study - \$100,000 deposit and 60 Calendar Day study timeline
  - **Estimate cost of direct assignment facilities to be charged to customer**
  - **Customer's share of costs for Network upgrades**
  - **Time required to complete construction and initiate request**

# Transmission Services Request

